

Talk with researchers at the IU School of Medicine, practice your skills on an actual ATV, and sign up to participate in an exciting research project about ATVs

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SCHOOL OF MEDICINE
INDIANA UNIVERSITY



Indiana State
Department of Health



**HERRON SCHOOL OF
ART AND DESIGN**

INDIANA UNIVERSITY
IUPUI

Jay's Autoworld
LLC



Collision Center
268-3803

ROUGH RIDERS

All Terrain Experience

Friday August 9 | 5pm-9pm
Sullivan City Park
at Sullivan County Night Out

LEARN ABOUT ATV SAFETY

Background

- Injuries of all types are decreasing in the U.S.
 - Safety features
 - Education + Policy + Enforcement
- Remaining injury patterns disproportionately affect children
 - Rural settings
 - Lack all three features of successful change
- Rural MVC collisions increasing
 - ATVs substantial component
 - 28% increase IN ATV accidents 2008-2012

Current Policy Recommendations

- AAP
 - Prohibit use by children under 16 years or age
 - Require driver's license to use
 - Preferably ATV specific training
- American Academy Orthopedic Surgeons
 - Prohibit use by children under 16 years or age
- Canadian Assoc. of Pediatric Surgeons
 - Not safe under 16

Current Policy Recommendations

- ACS
 - Use should be limited to individuals licensed to operate other motorized vehicles
- American Pediatric Surgical Association
 - Not under 16
 - Children age 16-18 max engine size of 90cc and supervised by legal guardian
 - Should complete training course
 - Wear helmet and protective clothing

Industry Response: Child ATVs

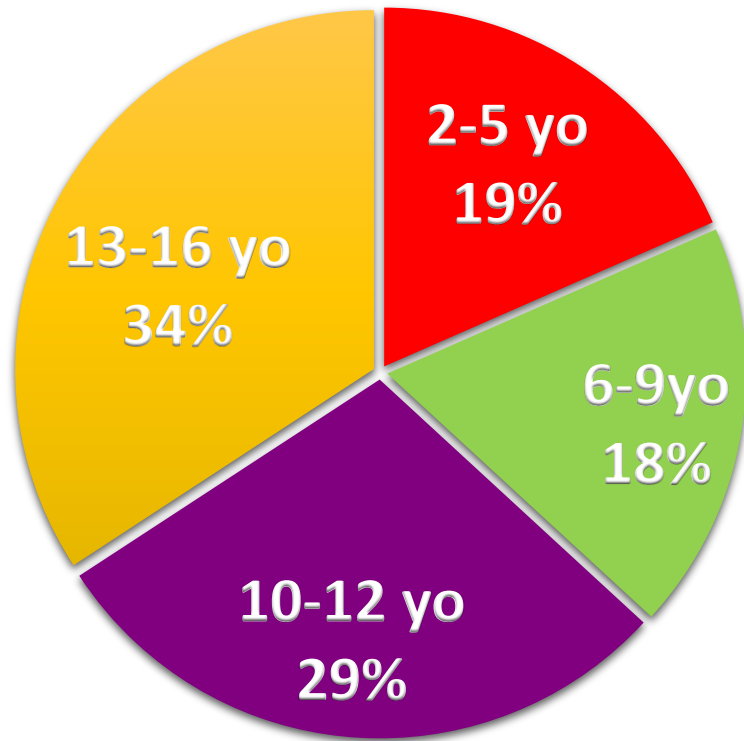
Adult ATVs drive
85 mph at max
speed

Child ATVs drive
50 mph at max
speed

Governors easily
disabled by adept
children.



Ages



ATV Injuries at Riley By Age

Average Age: 10 YO

Median Age: 11 YO

25% age 6 or less

Youngest age 2

ATV Mortality Indiana

- **State ATV Deaths Total Reported Deaths**
 - **1982-2006:156**
 - 46 (30%) Kids under age 16
 - **2007-2009: 34 (data incomplete)**
- Comparison
 - Indiana 2006 62 kids died of Cancer

U.S. Consumer Product Safety Commission
:<http://www.atvsafety.gov/state/indiana.html> accessed 5/25/11

Case # 1

- 15 yo female. Riding an ATV with a friend. While negotiating embankment – flips vehicle and is pinned underneath, partially submerged in retaining pond for ~ 15 minutes
- EMS arrival: Apneic, PEA
- EMTC arrival: GCS 3T

Case # 1

BP:153/94 HR:151 RR: 26 T 97.9

HEENT: Pupils 2 to 4 mm, reactive

CHEST: Diminished breath sounds on the left

ABDOMEN: Benign

PERINEUM: No rectal tone.

NEURO: GCS 3T

NO external signs of injury, no extremity or back/spine injury

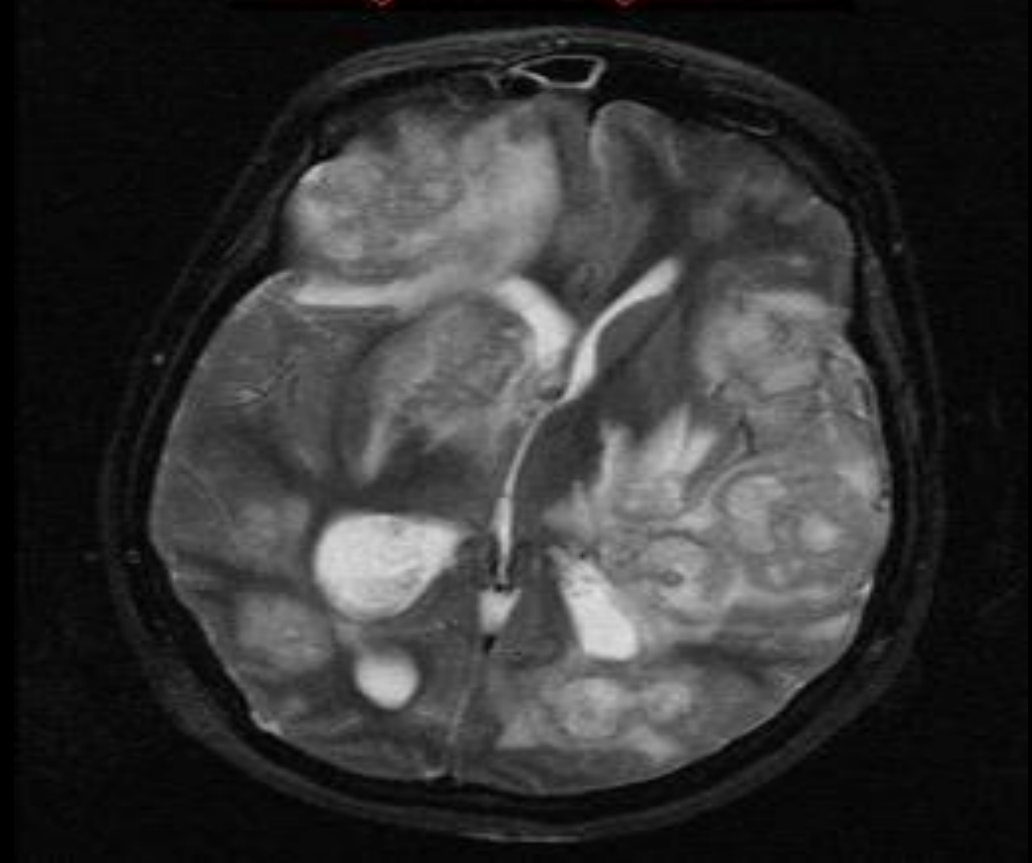
Case # 1: Evaluation

- C-spine, CXR, Pelvis films → Normal
- Head CT → Normal
- Chest CT → bilateral consolidation c/w aspiration
- Abdominal CT → periportal fluid

Admitted to the PICU for near-drowning without
apparent traumatic injuries

Case # 1

- Protracted hospital course: ARDS, Sepsis
- 3 weeks into admission: MRI demonstrates diffuse areas of abscess



Case # 1

- Progressed despite optimal anti-microbials and surgical intervention
- Shortly after her 16th birthday...
 - Brain death and withdrawal of care
- Not an organ donor candidate

Developmental Milestones:
Would you let a 2 year old drive a car?





What can a 2 year old do?

- Begins to run
- Carries toys with her
- Stands on tip-toe
- Climbs onto and down from furniture unassisted
- Builds block towers with 4 or more blocks
- Follows simple instructions
- Scribble

How about a 3 year old?

- Hops and stands on one foot for 5 seconds
- Can catch a bounced ball most of the time
- Draws circles and squares
- Speaks in sentences of 5-6 words
- Understands the concept of counting

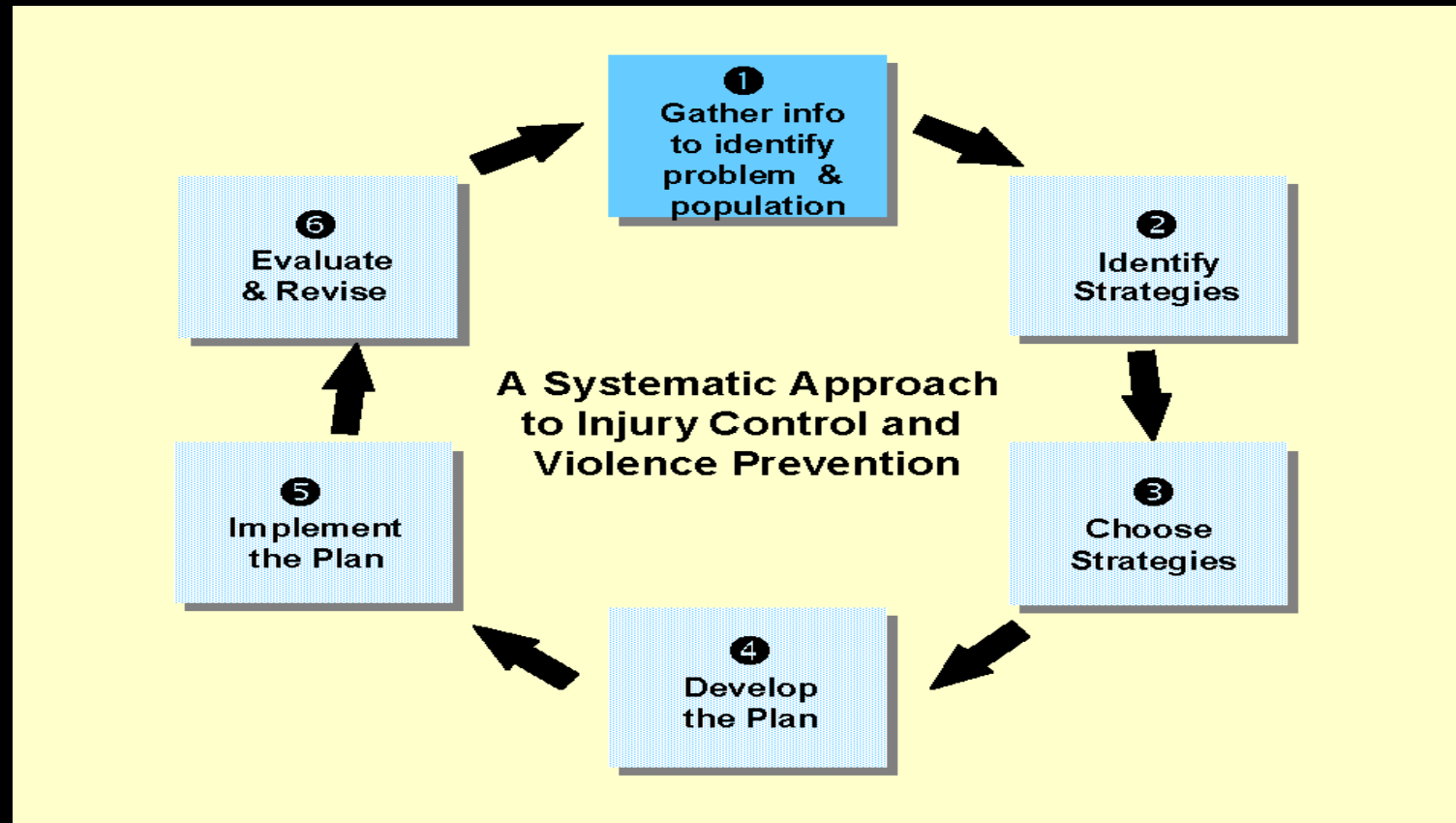




Indiana Law: IC 14-16-1-21

- All ATVs purchased after 12/31/05 must be titled.
- All ATVs operated on public lands must be registered; renewal is once every three years.
- No one under 14 years old can operate an ATV unless on his or her parent's land or under direct supervision of an adult 18 years of age or older.
- ATV use on paved roads is prohibited, except to cross these roads.
- Minimal Enforcement

Injury prevention basics



Haddon Matrix

Figure 2: Haddon's matrix, applied to motor vehicle crashes (1)

	Host	Agent	Environment
Pre-event	alcohol speed	tires brakes	signs, signals, surface
Event	belt use helmet use	seat belt airbags	side slope, guardrails
Post-event	health age	fuel system flammable materials	EMS response road shoulders

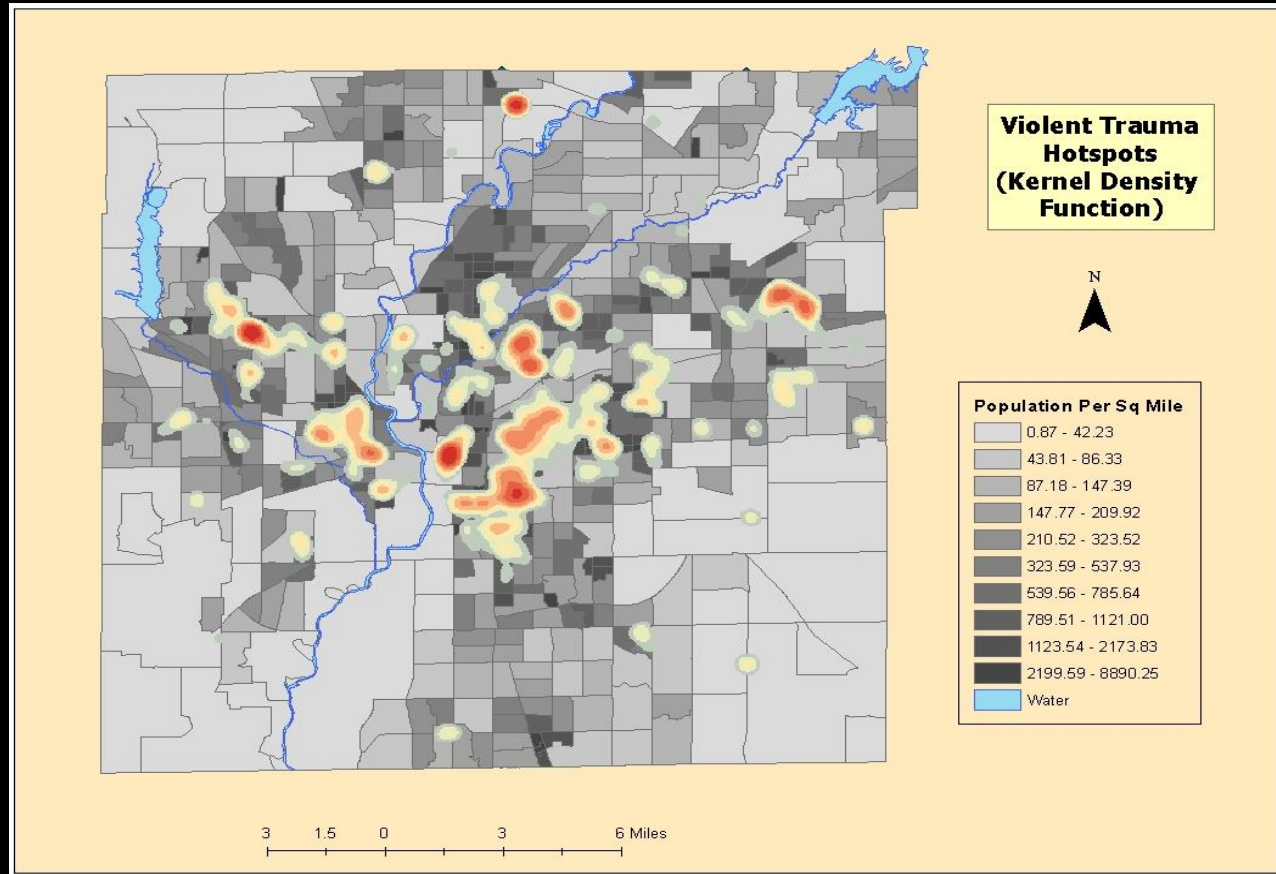
Brad's Last Ride

Brad's Story via the Haddon Matrix				
Injury Phase	Injury Factors for Brad's Last Ride			
	Human Individual	Injury Agent(s)	Physical Environment	Social Environment
Pre-event	anger, frustration, lack of supervision	ATV/rider mass momentum, immobile fence	noise, speed, limited time, no helmet	distraction, horseplay, no helmet wearing
Event	Brad's loss of ATV control	un-helmeted skull strikes fence post	huge impact forces to skull and brain	competition, operator distraction
Post Event	severe TBI, EMT, advanced life support, life-long nursing care	huge millisecond deceleration forces to brain	brain tissue tears, liquefies, and is destroyed	life-long costs of loss of memory, cognitive, motor, social functions

Program Proposal

- Engage rural critical access communities regarding ATV safety and use
- Pilot an injury surveillance system for ATV-related injury in rural settings
- Describe factors influencing ATV injury in children
- Develop an approach to reducing ATV-related injuries among children in rural areas in conjunction with the community and area critical access hospitals
- Develop and implement a summer “Safe ATVs” program

Cool GIS research



Even cooler GIS research



The Problem:

Disconnects

- Population
- Problem
- Culture
- Worldview

VISUAL IDENTITY

ROUGH RIDERS // ALL TERRAIN EXPERIENCE

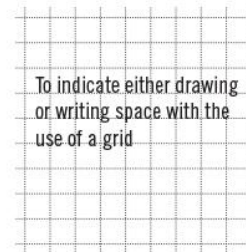
POSSIBLE COLOR SCHEME



USE OF GEOMETRIC SHAPES + PATTERNS



WRITING SPACE



POSSIBLE TYPEFACE

Rough Riders // All Terrain Experience

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ROUGH RIDERS // ALL TERRAIN EXPERIENCE

The solution:
messaging
and
behavioral
change
theory.

aka
Qualitative
cornhole

PROMPTS

6-20-13

Questions to understand their experience.

Calendar

- put down if they did or didn't ride that day (2 stickers)
- Various stickers for weather (or write)
- stickers or write mood
- indicate days you used camera
- if they brought someone along, second rider

Questions

- Did you ride somewhere new. Tell us about it.
- How does riding make you feel?
- How safe do you feel?
- Routine you take before you go on a ride
- Who do you go w/ when you go for a ride?
- Describe fave place to go for a ride.
- How often do you ride during the week
- How long do you go for a ride?
- How do you dress for a ride?
- What type of safety gear do you wear?
- Why do you ride? And why?
- Describe your perfect riding experience

- How do you show responsibility toward the ATV?
- Draw a pic of you riding your ATV
 - what are you wearing?
 - who are you with?
 - what's around you?
- What are you thinking while you're on your bike? ATV
- How do you fit riding into your day?
- How often are you allowed to ride?
- How long have you been riding ATV's
- How fast do you go?
- Draw where you like to ride the most
- Draw who you like to ride with.
 - Do they ride w/ you?
 - Do they have their own?
- What's your fave thing about riding?
- What's the distance you ride?
- Do you plan your ride? [or How do you plan...]

THINGS TO MAKE!

- stickers
 - weather (sunny, cloudy, rainy)
 - mood (smile, frown, indifferent)
 - ride or not (X, ATV)
- instructions
 - for camera (other stickers)

[Get Quote]
50, 8pg, 8.5 x 5.5, staple

The results: Sullivan County Night Out



ROUGH RIDERS

ATV EXPERIENCE

HELP IMPROVE ATV SAFETY FOR YOUR KIDS!

Is your child between the ages of 2 and 16?

Does he or she ride ATVs on a regular basis?

If so, your child might qualify to participate in an exciting research study about ATVs that will help us understand how to make riding ATVs safer!

This study is being conducted by researchers at the IU School of Medicine.

Our goal is to find ways to make ATVs as safe as possible for children to ride.

For more information, or if you are interested in participating, please contact:
Jennifer Walthall, MD // jdhewlet@iupui.edu // 317.962.5975

Sponsored by the IU School of Medicine, Indiana State Department of Health,
Center for Urban Health & Herron School of Art + Design



Rough Riders: Program Outline

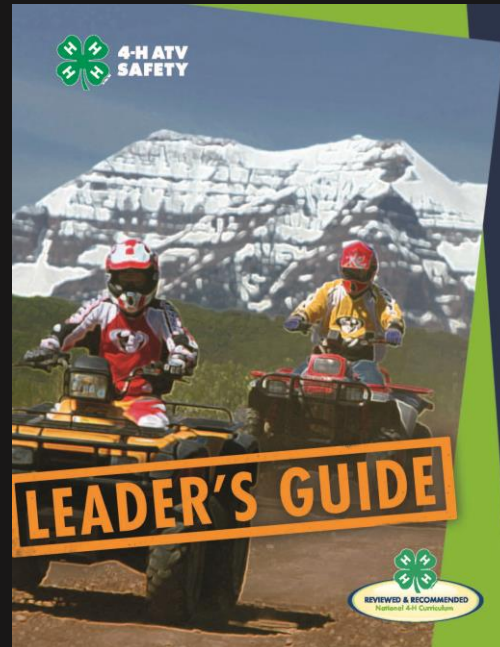
Rough Riders

All Terrain Experience

ATV Safety Education

Complete all 3 stations and receive a \$25 voucher to spend on a helmet!*

*while supplies last



Resources

- \$2,500 budgeted for Safe ATV Day supplies
- Sullivan county prosecutors office (Haley Benefiel haleybenefiel@gmail.com)
- ATV Safety Institute educational materials
- Jay's AutoWorld (contact: Tim Garrett, tingarrett@joink.com) - has agreed to donate vouchers/coupons for kids who complete the course and has agreed to allow us to use 2-3 ATVs to demonstrate safety procedures
- Jens: 1 supplied by Jen, Dillon has 2 more, if needed.
- Volunteers: Peds/EM residents, public health interest group, EM student interest group (2 shifts: 2:00-6:00p), may also reach out to public health students

Activities

- Night Out: August 9th, 5-9pm
- IUSM will have a tent to teach children and adolescents in attendance about ATV Safety
- The tent will have 3 stations: an interactive developmental assessment, a review of safety gear and suggested riding rules, and an ATV safety demonstration using demo ATVs borrowed from Jay's AutoWorld
- Attendees will have the option of attending all or none of the stations and participate as much or as little as they want
- At the last station, there will be a short survey to assess educational and behavioral outcomes post-intervention. These data will be used in the final report prepared for the Indiana State Department of Health
- Families will be recruited for the study during the ATV Safety Event

Outputs

- Participants will learn about a different aspect of ATV safety at each station
- It is our hope that all participants will chose to participate in all stations.
- Each station will leave participants with a more extensive and comprehensive written review of what was covered in that station (educational materials from ASI).
- Participants will be able to practice the techniques they learn on actual ATVs at the event.
- Our goal is have about 200 participants by the end of the event. For these purposes, a participant is someone who participates in at least one station and completes the exit survey.
- Each participant will receive a voucher/coupon for safety gear at Jay's AutoWorld

Outcomes

- We anticipate an increase in knowledge of ATV safety for all participants
- We hope that this preventative, educational intervention will lead to changes in behavior, especially among youth who report previous ATV risk taking behaviors. Behavioral outcomes will be assessed via the exit survey, and pre-intervention behaviors will rely on retrospective self report. Participants will also be asked about their attitudes and beliefs regarding ATV safety.
- Parents will have the opportunity to fill out a parent survey, which will be used to assess any change in knowledge, beliefs, or attitudes about ATV safety.
- Both parents and participants will leave with a better understanding of the important connection between developmental stage and ATV (engine) size as well as a better understanding of their child's developmental status.

Impact

- Increased knowledge of safe ATV operation techniques will lead to a decrease in ATV-related injuries over time in Sullivan, Indiana.
- Placing more value on safe ATV riding practices will contribute to larger-scale community-level changes in attitudes and beliefs surrounding ATV safety.
- A better understanding of safe operating practices among parents will promote increased knowledge among siblings and future children.

Rough Riders: Program Outline

Rough Riders
All Terrain Experience

ATV Safety Education

Complete all 3 stations and receive a \$25 voucher to spend on a helmet!*

*while supplies last

- “Passport to ATV Safety”
 - Participants who completed all three educational stations received \$25 voucher to spend on a helmet at Jays Auto World
- Baseline survey
 - Measures: basic demographic, ATV riding experience, ATV behaviors, knowledge, skill self-assessment, exposure to ATV safety messages

Rough Riders: Program Outline

Station 1

For parents & kids

- Readiness checklist
 - Trained education reviewed checklist with parent and child
 - Included items to assess visual perception/motor development ability, physical development, social/emotional development, reasoning & decision making ability

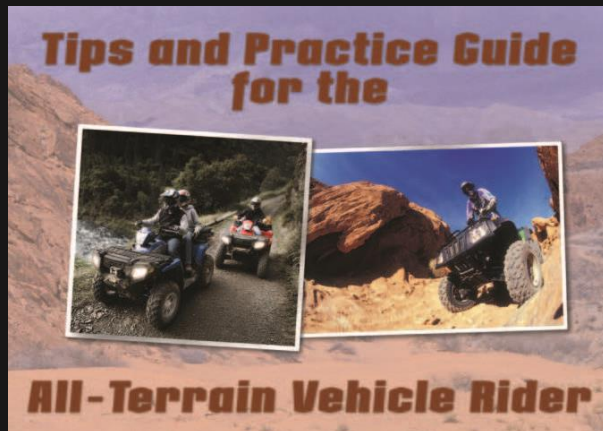


Rough Riders: Program Outline

Station 2

Before you ride

- Safety gear
- Pre-ride inspection procedures (T-CLOC)
- Safety gear activities
 - Design your dream helmet
 - Draw what you look like when you're ready to ride an ATV

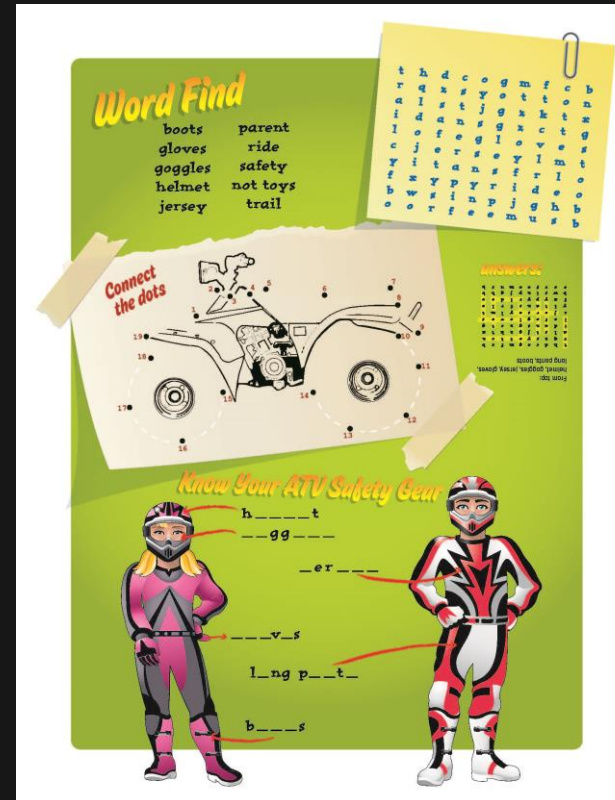
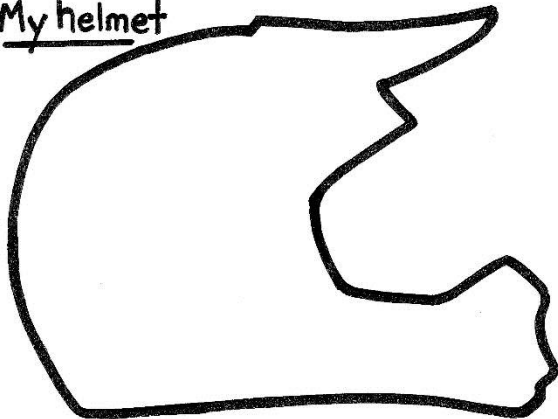


Rough Riders: Program Outline

Station 2

Before you ride

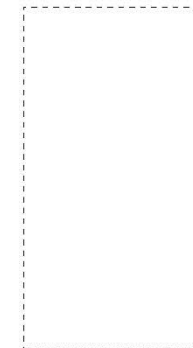
My helmet



DRAW YOUR DREAM PLACE TO RIDE AN ATV



DRAW WHAT YOU LOOK LIKE WHEN YOU'RE READY TO RIDE AN ATV

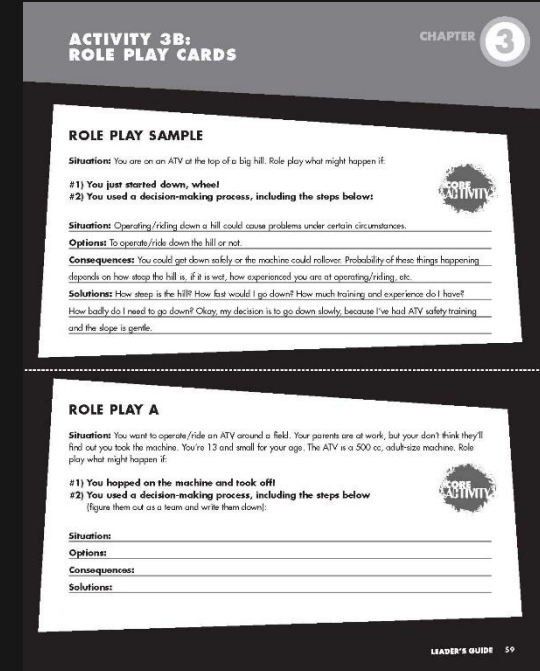
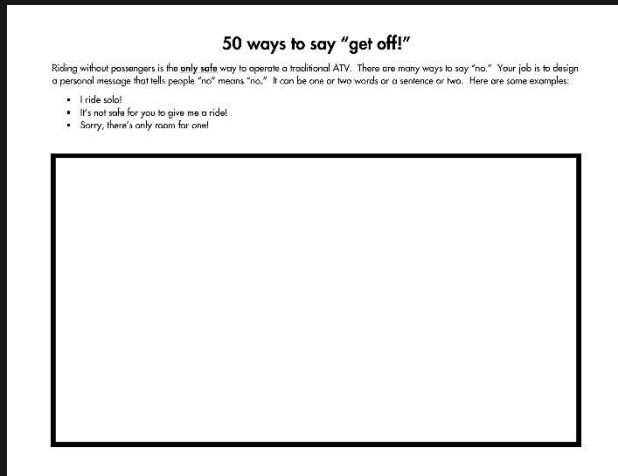


Rough Riders: Program Outline

Station 3

Safe riding techniques

- Safe start procedure: BONE-C
- Think before you ride activity
- Tips on:
 - Shifting gears
 - Braking
 - Parking
 - Turning
 - Riding on hills
 - Traversing a slope



Rough Riders: Program Outline

Station 4

Test your skills!



- Fit like a glove activity
- Locating the controls
- Simulation / maneuvering
- Starting procedure demo

3

RIGHT-SIZED MACHINES

ACTIVITY 3A:
FIT GUIDELINES

FIT GUIDELINES

To be a safe operator/rider, it's important that your ATV fits you. In addition to following the age/size recommendations (bottom right), you should be a good match with your ATV, not only in size, but in strength. This helps you control it better. Use these guidelines to help determine if your ATV is the right size!

AREA	REQUIREMENTS & BENEFITS
CLEARANCE BETWEEN ATV SEAT & INSEAM	Three to six inches should be a minimum clearance between your ATV seat and inseam, while standing up on footrests. This proper clearance lets you stand up and absorb shocks through your legs while operating/riding on rough terrain. It minimizes the chance that your seat will hit you during a ride, throwing you over the handlebars. Proper clearance also improves your visibility and comfort.
UPPER LEGS	The upper portion of your leg, roughly from the top of the knee to the hip, should be about horizontal. A little above or below horizontal shouldn't be a problem, but huge differences (knees jutting below or above the hips) should be checked by an adult. If your knees are quite a bit above your hips, turn the handlebars in both directions and check for contact with knees or legs. This important fit area helps keep you in control of your vehicle.
FOOT LENGTH	Place the heel of your right shoe against the footrest or in the proper position on the running board. Your toe should be able to depress the footbrake with a simple downward rotation of your foot. Check for have any contact with engine or exhaust protrusions. You should be able to use the brakes consistently without hesitation. [The same rule applies to the ATV's left side, where the gearshift is located.] This allows you to keep control of your shifting and braking.
GRIP REACH	Sit normally on your ATV with your hands on the handlebars. Your elbows should have a distinct angle between your upper arm and forearm. If your elbows are straight, you won't be able to turn the handlebars. Make sure you aren't leaning forward to compensate for a short reach. If your elbows are at less than right angles, you are too large for the ATV and steering will be difficult. This guideline helps you turn and steer your ATV and keeps you balanced.
THROTTLE REACH	With your right hand in the normal operating position, check to see if your thumb can easily operate the throttle. Turn the handlebars to the extreme left and right positions. Check again for any interference with easy operation. This keeps you in control of speed and handling.
BRAKE REACH	Place your hands in the normal operating position with your fingers extended. Check to see if the first joint (from the tip) of your middle finger extends beyond the brake lever. If not, your hand is too small to effectively grasp the lever in an emergency. Make sure your thumb also reaches the engine stop switch. Squeeze the brake lever a few times to be sure you can comfortably operate the controls. Following this guideline keeps you in control of stopping.

CORE ACTIVITY

52 4-H ATV SAFETY

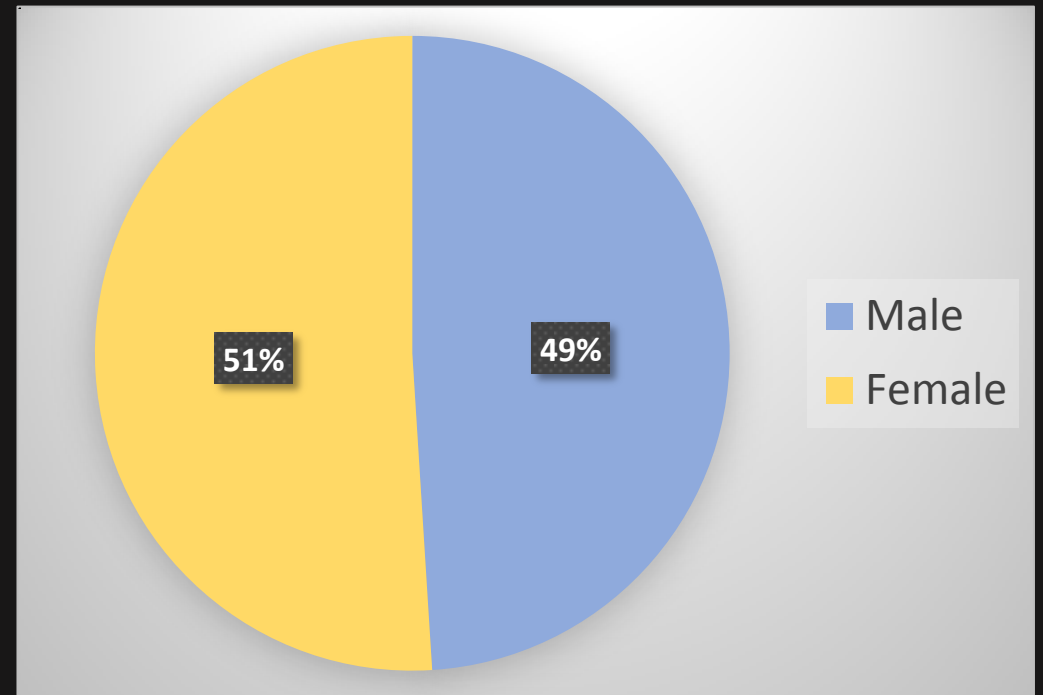
Rough Riders: Participant Demographics

Age (n=52)

Average: 9 years old
(s = 3.3 years)

Range: 3-20 years old

Gender



Rough Riders: Participant Demographics

56% had driven an ATV.

Of those, 50% started when they were
under the age of 6.

Rough Riders: Participant Demographics

40% had seen or
heard something
about ATV safety
in the past year.

44% had ever
heard that ATVs are
not meant to
carry passengers

Rough Riders: Participant Demographics

74% reported having
been a passenger on an ATV

63% reported having
driven with a passenger on
an ATV

48%: always
wear a helmet

12%: always
wear goggles

Rough Riders: Participant Demographics

21%

had driven on a public road
had ever been in a crash

57%

knew someone **injured** in an ATV
accident

18%

knew someone who **died** in an
ATV accident

Corn Hole Summary

- Game tested knowledge about ATVs from kids that attended the Sullivan County Night Out. The game was positioned in a way that brought kids to the booth and allowed the researchers to gather data from kids that were able to continue through the rest of the booth as well as kids that were not able to.
- The kids answered true and false questions by throwing bean bags into tires and were awarded prizes after their responses were recorded. The majority of the kids had been on ATVs before and most answered the questions correctly.
- The game came about as a way to gather data in an enjoyable way in a carnival like environment. The method of gathering data needed to be fast, fun, and in the theme or feel of the evening as well as the booth it was a part of. For this reason, one true/false question was asked of each child participating and tires were used as targets for the bean bags.



Questions?

